INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT

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INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT　ii

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INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESIS (ES)

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

LIMITATIONS

SCOPE FOR FURTHER RESEARCH

REFERENCES

APPENDIX/ANNEXURE

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- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.

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FOREIGN INSTITUTIONAL INVESTORS (FIIs) FLOWS AND VOLATILITY IN STOCK MARKETS OF INDIA DURING SUB-PRIME CRISIS AND POST FPI ACT

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ABSTRACT

The portfolio investment by Foreign Institutional Investors (FIIs) has become a remarkable force behind the development of Indian stock market and is majorly perceived as a chief cause of stock market volatility. In order to ascertain the nexus between FIIs portfolio flows and stock market volatility the impact study of stock market returns and FIIs inflows and outflows relationship has been established. The present study is conducted on basis of daily time series of NIFTY, SENSEX and FIIs activity for a period of sixteen years spanning from January, 2001 to December, 2016. The primary motive of study is to explore relationship among a FII flows and volatility in stock markets during unlike situations and favourable situations of capital market.The data is divided according to certain important events in recent past such as great financial crisis during 2008-09 and introduction of new act known as FPI act, 2014.In present study, traditional statistical tools like mean, variance, standard deviation, skewness and kurtosis analysis are used to examine the impact of FIIs impact on Indian stock market volatility. In addition to these tools, the modern tool namely ARCH and GARCH model is also used to study the impact of FIIs capital flows on stock market volatility. To check the non-stationary of the time series the Augmented Dickey-Fuller (ADF) test is applied. The study reveals that there is a significant relationship between FIIs capital flows and stock market volatility. Moreover, FIIs investment has statistically significant influence on volatility in returns of NIFTY and SENSEX, used as biggest pointer to Indian stock market. The meticulous analysis has revealed that volatility prevails in both of the stock markets due to FIIs flows but has considerably reduced after stringent new act of FPI is introduced. The study has shown the similar results with historical method and the contemporary volatility estimators.

KEYWORDS

BSE, GARCH, sub-prime crisis, NSE, volatility.

INTRODUCTION

The present study is to measure the impact of foreign investor's portfolio investments on volatility of stock markets in India. Accordingly, an attempt is made to find the impact of volatility of BSE & NSE due to changing flows of FIIs. Various studies have found instability in stock returns and FIIs flows as key alarming situation for stock market investors, merchants, government investments. The inability to capture the level of oscillation in the prices of shares and volatility attached with stock returns has brought attentions of many researchers and concern of stake holders. This has attracted numerous of researchers to study the relationship between FIIs Portfolio flows and volatility in stock market of India.The market efficiency of stock market has reasonably improved after liberalised flows of FIIs. Foreign institutional investors follow international standard for portfolio diversification and brings global experience which results in improvement of stock market returns. On the contrary it also brings systematic and unsystematic risk along with financial flows. So it has become vital aspect to ascertain the major reasons behind the volatility and diverse nature of returns.

This study is an attempt to analyse the dynamics of stock market returns and FII flows. The basic element of volatility is the information concerning past and present which brings fall and rise in stock market returns. This study is an attempt to find whether volatility has significant role in increase or decrease in flows of FIIs. In addition, swings and subsequent reversals in FIIs flows highly influence the emerging stock markets and create urge to understand the dynamics of stock prices and FII approaches. Volatility is becoming an alarming feature for major researches and formulation of polices by the government and distressing distribution of resources. Volatility create fear in the mind of investors due to which they do not hold stocks for longer period and on the other hand few investors earn high returns due to high volatility in the stock prices even in short holding. Many researchers are opposing to this notion that FIIs flows negatively impact the market volatility.

REVIEW OF LITERATURE

Many researchers have done studies to determine the relationship between the FIIs flows and stock markets in India.Few researchers have found the positive relation and few of them found negative relationship. This segment of paper reviews them in brief.

Chakarbati (2001) Provides enough evidence that there is significant high correlation with returns of stock indices in India. He found that return causes the FII flows but returns does not affects the FII flows. **Kumar, S.S.S (2000)** found that there was stability during 1990-1998 in BSE returns before the arrival of FIIs.His study also revealed that volatility in stock market has reduced after the arrival of FIIs when compared with pre-arrival. **Mazumdar (2004)** Study revealed that FII flows improve liquidity in stock market but haven't found enough evidence of volatility in returns due to FII flows. **Biswas Jaideep (2006)** found that impact of FII liberalization, development and growth of Indian stock market during 1991-2005.His study reveals that liberalizing benefited to larger extent in growth of stock market. Trading volume and market capitalization and liquidity had significantly improved post-liberalization. **Batra.A (2004)** examined that time variation in volatility using monthly data and asymmetric GARCH model augmented by structural change analysis. Study found that of nature of events caused changes in volatility such as (BOP) crisis and reforms in stock market rather than global events. **Benerjee and Sarkar (2006)** conducted a study during 2000-2004 on volatility and NSE returns, using intra-day data and applying GARCH Model. He found that that there is clear evidence of volatility clustering, leverage effect on volatility change in volume positively affects the market. Further, he found that FII flows does not affects significantly increase in volatility of returns.

RESEARCH QUESTIONS

The main focus of the study is to examine the effects of trading activity by FIIs on the volatility in the Indian Capital Markets. Here, attempt has been made to find solutions to countless unresolved Questions. Answers to these questions will help policy makers to address the problems of FII flows with much improved approach.
1.   Do FIIs help in the improvement of investment scenario in Sensex and Nifty?
2.   What is the Impact of boom or crash created by FII's on Stock Markets stock market returns on FII flows?
3.   What is the influence of the present & past information on the volatility in returns of Sensex and Nifty?

OBJECTIVES OF STUDY

The broad objective of the study is to analyze the impact of foreign institutional investors' investment on Indian stock market. This study is formalized to find the effect and to analyze the dynamics of FII flows on the Indian stock markets. The basic feature of volatility is that past and present information brings rise and fall in stock prices. Further this study is an attempt to find whether volatility has increased or decreased its impact on Indian stock market over the period of study and have a significant impact due to changing circumstances in financial markets.

The other main objective of this study is to investigate whether the foreign institutional investors has influence on the stability and efficiency of Indian stock market. The study undertakes an analysis of stock returns volatility in India in the circumstances of financial crisis and change after the introduction of New FPI act. In order to achieve aforementioned objective, the stock return has been calculated on basis of daily data of closing index of Nifty and Sensex.

HYPOTHESIS OF THE STUDY
Keeping in view the above-mentioned objectives of the study, it was proposed to test the following hypotheses:
Ho: There is a significant change in volatility in the returns of Indian Stock Market due to changing flows of FIIs during sub-prime crisis and introduction of New FPI act
Ha: There is no significant change in volatility in the returns of Indian Stock Market due to changing flows of FIIs during sub-prime crisis and introduction of New FPI act

DATA SOURCES
This study attempts to ascertain the volatility relationship between FII Flows, BSE returns and NSE returns. To ascertain the volatility ubiquitous in the Indian stock exchanges, we have taken up daily data ranging from 2001-16 (16 years) for all the variables under the study.

TABLE 1: PERIODICALLY DATA SOURCES OF VARIABLES

Variable	Period	Source	frequency
FII (NET)	1-1-2001 to 31/12/2016	SEBI and Bloomberg database	Daily
BSE (RETURN)	1-1-2001 to 31/12/2016	BSE official website	Daily
NSE(RETURN)	1-1-2001 to 31/12/2016	NSE official website	Daily

Financial institutional investors cover different quality and quantity of investment in stock exchanges and manage their risk accordingly. These functions can't be captured by a single measurement or sample. Also at the moment there is no broad consensus as to which of the proxies is the best measurement of stock market development. Therefore, the essence of discovering role of foreign institution investors and stock markets is to find unanswered relation among them and how flows contribute to volatility of the market. The primary motive of study is to developed relation among a FII flows and volatility in stock markets during diverse situations of capital market. The data is divided according to certain important events in past such as great financial crisis during 2008-09 and introduction of new act known as FPI act, 2014. For that reason data subsets are formed to explore the volatility dynamics seen in the different time period.

TABLE 2: PERIODICITY OF EVENTS AND SAMPLE SUB-SETS

Sample Sub-Sets	Base/Events	Time Period
P-I	Reform period/Asian Crisis	1/01/2001-31/12/2006
P-II	Pre-Financial Crisis	1/01/2007 -09/01/2008
P-III	During Financial Crisis	10/01/2008 -01/09/2008
P-IV	Post –Financial Crisis	2/09/2009 -31/12/2012
P-V	Before FPI Act	1/01/2013 -06/01/2014
P-VI	After FPI Act	7/01/2014 -31/12/2016

RESEARCH METHODOLOGY
The Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) are two leading stock exchanges of India. The foreign institutional investors are majorly interested in investing larger in these markets. So, both of these markets have been taken to study the dynamics of the foreign institutional investment in India. Therefore, to determine the impact of FIIs on Indian stock market (i.e. on return and volatility) Bombay Stock Exchange and national stock exchange has been considered. The time period taken under of the study varies with the various events in financial markets. Traditional method of standard deviation of returns or squared returns is used to find out the extent of impact of volatility in stock prices due to FIIs flows, but due to limitations of traditional measures of volatility the present study has also used conditional volatility models namely ARCH & GARCH model to overcome the drawbacks of traditional methods. The study follows both traditional and popular conditional instability models to understand the varying nature of volatility.

To examine the extent of volatility in Nifty returns and Sensex returns, the daily closing prices have been taken and further these are converted to logarithmic returns. After conversion of data series of returns into logarithmic returns all series are tested for unit root.ADF test is run to check the stationary of data series. This study applied econometric model ARCH and GARCH. More, specifically we have used the GARCH (1, 1) model. To specify the GARCH model two equations have to be specified. One is the mean equation and the second is the variance equation.
The mean equation is as follows:

$BSE_t/NSE_t = a + b_1 FII + e_t$ (1)

Second equation formed is the variance equation of the following form:

$h_t = w + a_i e^2{}_{t-1} + b_i h_{t-j} + \Psi FII$ (2)

Where, h_t is the conditional variance at period t.

In equation (2) first term after the intercept w is the ARCH term, which shows the affect of recent news on the volatility of the underlying stock market by putting the square of previous error term. And second term is the GARCH term, which shows the affect of previous volatility on the current volatility and ΨFII is showing the impact of the variable on the volatility in the return of underlying stock market, which is NSE and BSE in case of the present study.
The level of volatility in the Indian stock market has been examined using unconditional variance using the formula:

$Var\ E_t = \alpha_0 / 1-(\alpha_1+\beta_1)$ (3)

Where,

α_0=Intercept

α_1=ARCH Term

β_1=GARCH Term

EMPIRICAL ANALYSIS
LEVEL OF VOLATILITY IN THE NSE (NIFTY) AND FII FLOWS
Traditional methods such as average return and standard deviation is employed to examine the impact of financial institution investors flows on stock markets in India using daily stock return from the January, 2001 to December, 2016. The sample is divided into five sub-samples on the basis of major financial market events:

TABLE 3: VOLATILITY OF NSE (NIFTY) RETURNS AS PER CONVENTIONAL MEASURES & DESCRIPTIVE STATISTICS

	Reform Period & Asian Crisis	Before Sub-prime crisis	During Sub-prime Crisis	After Sub-prime Crisis	FPI (Pre-Act)	FPI (Post-Act)
Mean	0.000774	0.001703985	-0.00276	0.000883	0.000145	0.001076
Standard Error	0.000372	0.001041736	0.001548	0.000449	0.000707	0.000493
Standard Deviation	0.014404	0.015901409	0.026996	0.013834	0.011296	0.008478
Sample Variance	0.000207	0.000252855	0.000729	0.000191	0.000128	7.19E-05
Kurtosis	7.312093	1.530382389	1.664656	20.36073	1.561804	0.927816
Skewness	-0.90283	-0.209712129	-0.30882	1.718425	-0.09247	-0.15576

Daily closing prices of NSE (Nifty) have been taken to examine the volatility. The daily closing price series has been converted into logarithmic returns. These logarithmic returns have been tested for unit root. The stationary of the all data series has been confirmed using ADF test statistic testing the null of non stationary. The descriptive statistics for nifty have been reported in table: 3 above. The descriptive statistics report that nifty return series is, the basic statistics indicate that the mean return (-0.00276) is during the period of Subprime Crisis which has been recovered in post FPI act (.001076) closer to zero, when relatively compared to the standard deviation (0.014404) and (0.008475) respectively. The return series is negatively skewed in each period but only positive in the post crisis period. The negative skewness implied that the return distributions of the shares traded in the market in the given period have a higher probability of earning returns greater than the mean. The results are similar to Chakarbati (2001), biswas jaideep (2006) in Bombay Stock Exchange and National Stock Exchange.The Kurtosis, which measures the magnitude of the extremes, is greater than three, in the case of reform period and post financial crisis period which means that the return series are leptokurtic in shape, with higher and sharper central peak, and longer and fatter tails than the normal distribution. In case of other sub sample periods distribution kurtosis is less than 3, which indicates platykurtic. Compared to a normal distribution, its central peak is lower and broader, and its tails are shorter and thinner. A risk-averse investor prefers a distribution with low kurtosis (i.e. returns not far away from the mean). Thus, sufficient evidence for using GARCH model has been generated with the help of ARCH Test. Further to model the variance, GARCH (1, 1) equation has been estimated. GARCH (1, 1) empirical results in this regard are reported in table: 4

TABLE 4: NSE VOLATILITY MEASUREMENT: GARCH (1, 1)

TIME PERIOD	INTERCEPT(α_O)	ARCH(α)	GARCH(β_1)	$=\alpha_1+\beta_1$	VARIANCE
Reform period	0.0000117	0.173135	0.748195	0.92133	0.000148723
Pre -Crisis	0.0000141	0.091941	0.856701	0.948642	0.000274543
Crisis Period	0.0000283	0.133189	0.831242	0.964431	0.000795637
Post crisis	0.00000101	0.048033	0.944967	0.993	0.000144286
Pre act	0.00000214	0.060023	0.92619	0.986213	0.000155219
Post act	0.0000148	0.01383	0.806108	0.819938	8.21939E-05
Whole period	0.0000466	0.114317	0.866961	0.981278	0.00248905

To examine the level of volatility prevailing in the Indian stock market, GARCH (1,1) equation has generated the values for different parameters. These parameter values have been found to be significant as p value is zero for the constant, the ARCH term & the GARCH term. The level of volatility in the NSE has been examined using unconditional variance method. Thus various values generated using GARCH (1, 1) has been put into equation (3) and the level of volatility have been estimated. For time series analysis, it is desirable to have stationary series. Stationarity of the series can be found by summation of $\alpha_1+ \beta_1$ and the value of summation should be less than one. As for the stationarity of the variance process, it was observed that $\alpha_1+ \beta_1$ is 0.981 for Nifty for whole period (value of α_1 is + 0.114 and that of β_1 is +0.867, reported in Table 4) Hence, stationarity condition ($\alpha_1+ \beta_1 < 1$) is satisfied in NSE stock market. However, the sum was rather close to one which indicated a long persistence of shock in volatility. It implies a 'long memory'. A large value of GARCH lags coefficients β_1 (+ 0.867 for Nifty indicates that shocks to conditional variance take a long time to die out, so the volatility is 'persistent'. Low value of error coefficient α_1 i.e. 0.114 for Nifty suggests that market surprises induce relatively small revisions in future volatility. The present study has attempted to devise a volatility forecast model for the NSE Nifty and concluded the GARCH (1, 1) specification fits the system. On the basis of ARCH /GARCH analysis indicate clearly lower volatility during period of reforms, significantly better than found in pre-crisis period. Interestingly, volatility was higher in era of second generation reforms or during Asian crisis period and post financial sector reforms and during (i.e. 2000-06). Further reveals that the stock return had collapsed and variance was highest during the crisis period. Simultaneously, the variance which measures the volatility has mounted from 0.00027 percent during pre-crisis period to 0.00077 percent during crisis. Further, volatility had dropped after the massive crisis and re-opening up of domestic stock market for FIIs. Time period of crisis gave a serious setback to stock market performance. However, after the introduction of new FPI act, it clearly boosted up to the stock returns and the volatility has declined to large extent in Indian stock market. It is appreciable that new FPI Act has brought in more cheers for the capital market as the risk (i.e. variance) has lowered and the stock returns have gone higher in the time period. Level of volatility prevailing in the stock market has been found to be lower during whole period. It is observed from the table that the coefficient of ARCH (1) term is significant at 1 percent level. The above clearly indicates that the recent past information is creating a positive and significant impact on the volatility of the return of the stock market. Similarly, the coefficient of GARCH (1) term also shows a positive and significant impact on the share market volatility, the GARCH term impact is higher in comparison to ARCH term which implies that the past volatility affect is more on the future volatility. Similar to the S.S.S. (2000), it implies that due to the introduction of foreign institutional investors the volatility in Indian stock market. So, we do not accept the Null Hypothesis that there is no significant volatility in the National stock market (NSE-Nifty) due to FII Flows.

LEVEL OF VOLATILITY IN THE BSE SENSEX AND FII FLOWS

TABLE 5: VOLATILITY MEASUREMENT OF BSE SENSEX (CLASSICAL ESTIMATOR)

	Reform Period & Asian Crisis	Before Sub-prime crisis	During Sub-prime crisis	After Sub-prime Crisis	FPI (Pre-Act)	FPI (Post-Act)
Mean	0.00084	0.001534	-0.00294	0.000922	0.00022354	0.001011
Standard Error	0.000365	0.00101	0.001577	0.000447	0.00068095	0.000494
Standard Deviation	0.014146	0.015424	0.027499	0.013781	0.01087386	0.008497
Sample Variance	0.0002	0.000238	0.000756	0.00019	0.00011824	7.22E-05
Kurtosis	5.837075	1.456777	0.941863	19.32159	1.47711102	1.009896
Skewness	-0.71236	-0.19175	-0.11799	1.72247	-0.0854079	-0.1289

The descriptive statistics for BSE Sensex have been reported in table 5. The stationary of the series has been confirmed using ADF test statistic testing the null of non stationary. The descriptive statistics indicate that the mean return (-0.00294) prevails during the period of crisis and which has been recovered in the period post FPI act (0.001011) which is closer to zero, moreover relatively compared to the standard deviation (0.027499) and (0.008497) respectively. The return series is negatively skewed in each period but positive in the post crisis period. The negative skewness implied that the return distributions of the shares traded in the market in the given period have a higher probability of earning returns greater than the mean. The results are similar to NSE (Nifty). The Kurtosis, which measures the magnitude of the extremes, is greater than three, in the case of reform period and post financial crisis period which means that the return series are leptokurtic in shape, with higher and sharper central peak, and longer and fatter tails than the normal distribution. In case of other sub sample periods distribution kurtosis is less than 3, which indicates platykurtic. Compared to a normal distribution, its central peak is lower and broader, and its tails are shorter and thinner. A risk-averse

investor prefers a distribution with low kurtosis (i.e. returns not far away from the mean). The evidence of high kurtosis is also consistent with the results of previous findings e.g., Mazumdar (2004), Batra. A(2004)Banerjee and Sarkar (2006).

The above table clearly indicates that both daily return and volatility during 2001, period of financial sector reforms or Asian crisis period, were significantly higher than those found in pre-crisis period. Returns were enthusiastic and volatility was normal during the era of financial sector reforms (i.e. 2000-06). It is depressing to see from the table that the great financial crisis negatively impacted the Indian stock market which have brought in more distress for the capital market as the risk (i.e. Standard Deviation of return) increased but the stock return went negative in the period. Clearly the volatility has declined in Indian stock market after year 2014. Simultaneously, the standard deviation which measures the volatility has declined from 2014 onward after introduction of new FPI Act. Thus, both volatility and return have improved after the introduction of FPI Act in domestic stock market for FIIs. It indicates that it is good time to recover, after a serious setback on stock market performance due to Sub-prime crisis.

TABLE 6: BSE VOLATILITY MEASUREMENT: GARCH (1,1)

TIME PERIOD	INTERCEPT(α_O)	ARCH(α_1)	GARCH(β_1	=α_1+(β_1	VARIANCE
Reform period	0.0000141	0.173142	0.75035	0.923492	0.000184294
Pre -Crisis	0.000011	0.091941	0.86656	0.958501	0.000265067
Crisis Period	0.0000364	0.134126	0.821724	0.95585	0.000824462
Post crisis	0.00000109	0.042031	0.948632	0.990663	0.00011674
Pre act	0.00000215	0.054803	0.929339	0.984142	0.000135578
Post act	0.0000171	0.01383	0.76331	0.77714	7.67298E-05
Whole period	0.0000426	0.112315	0.869762	0.982077	0.002376834

As for the stationarity of the variance process, it was observed that α_1+ β_1 is 0.983 for Sensex for whole period (value of α_1 is + 0.1123 and that of β_1 is +0.869, reported in Table 6. Hence, stationarity condition (α_1+ β_1 < 1) is also satisfied in BSE stock market. However, the sum was rather close to one which indicated a long persistence of shocks in volatility. It implies a 'long memory'. A large value of GARCH lags coefficients β_1 (+ 0.869 for Sensex indicates that shocks to conditional variance take a long time to die out, so the volatility is 'continual'. Low value of error coefficient α_1 i.e. 0.1120 for Sensex suggests that market surprises induce relatively small revisions in future volatility. The present study has attempted to devise a volatility forecast model for the BSE Sensex and concluded the GARCH (1,1) specification fits the system. On the basis of ARCH /GARCH analysis indicate clearly lower volatility during period of reforms, significantly better than found in pre-crisis period. Interestingly, volatility was higher in era of second generation reforms or during Asian crisis period and post financial sector reforms. Further reveals that the stock return had collapsed and variance was highest during the sub –prime crisis period. Simultaneously, the variance which measures the volatility has mounted from 0.000265 percent during pre-crisis period to 0.00082 percent during crisis. Further, volatility had dropped after the huge crisis and re-opening up of domestic stock market for FIIs. Time period of crisis gave a serious setback to stock market performance. However, after the introduction of new FPI act, it clearly boosted up to the stock returns and the volatility has declined to large extent in Indian stock market. It is appreciable that new FPI Act has brought in more cheers for the capital market as the risk (i.e. variance) has lowered and the stock returns have gone higher in the time period.

The present study has attempted to formulate a volatility forecast model for the BSE Sensex and Nifty, and concluded the GARCH (1, 1) specification fits the Sensex return and Nifty return time series quite well. To examine the level of volatility prevailing in the Indian stock market, GARCH (1,1) equation has generated the values for different parameters. These parameter values have been found to be significant as p value is zero for the constant, the ARCH term & the GARCH term. The level of volatility in the BSE and NSE has been examined using unconditional variance method. Thus various values generated using GARCH (1,1) has been put into equation (3) and the level of volatility has been estimated. The results show that in the case of daily data ARCH(1) coefficient is not found significant while the GARCH (1) coefficient is still positively significant so, we accept the Null Hypothesis that there is no volatility in the Sensex due to FII Flows. The total of the ARCH and GARCH term is less than 1, which implies that the model is perfectly structured.

CONCLUSIONS

The time period of study has noticed tremendous policy changes in Indian stock markets more importantly developments like New FPI act, dematerialization of securities, established liberal trade practices and stringent corporate governance practices formulated by SEBI and RBI. These all brought efficiency in the market and reduced the risk of volatility in the market to the larger extent. This study is carried out to understand the volatility behaviour of the Indian stock market by computing historical volatility levels of Nifty using classical, range based and drift independent volatility estimators. The study also aims to estimate conditional variance of the sample return series through GARCH (1, 1) model. On the whole, the analysis of 16 year data starting from January, 2001 to December, 2016 established six phases in volatility in Sensex and Nifty, namely, the boom and subsequent crash of the Indian stock market during 2001-06 and the subprime financial crisis that cropped up across the globe during 2008-2009. The volatility in the stock return of Nifty and Sensex shows that Indian stock market reacts intensely to the fluctuation in funds flows by FIIs and it takes larger time to die out. It indicates that Indian stock markets are not highly efficient and impact of information does not reflect easily or for longer period in alignment of Batra (2003), Mazumdar (2004), Banerjee and Sarkar (2006) Biswas, Jaydeep (2006) the results of the study conclude that there is significant impact on volatility of the FII investments. Hence, volatility prevails in both the stock market due to FII flows during the period of study.

The present study has revealed that GARCH (1, 1) fits the system and forecast the volatility with ARCH and GARCH model. On the basis of analysis, it has cleared the picture that during the period of reforms volatility was lower in comparison to pre-crises period. Surprisingly the level of volatility during Asian crises period was higher as compare to other period. Despondently, the level of variance was high on the basis of standard deviation during the sub-prime crises period. Further, volatility has plunged after the crises period and regained the faith of investors in the stock markets of India. The time period of crises gave a serious shock to the efficiency of stock market and dampens down the interest of foreign institutional investors in the Indian stock markets. However, after the introduction of new FPI act, volatility has declined to larger extent and has boosted the inquisitiveness of investors. The time period taken under the study is well known for policy changes and new regulatory regime such as new FPI act, dematerialized of securities, stringent corporate governance practices. These developments during this period has brought efficiency to the market and helped in reducing the uncertainty of volatility in the stock market returns.

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